

# **Status of the Fish Community 1991-2000 Hells Canyon Complex (E. 3.1-5, Chapter 3)**

John W. Anderson

AFS Certified Fisheries Scientist

Cold Stream Consulting, P.O. Box 575 Baker City, OR 97814

Contracted by the

**Oregon and Idaho Bureau of Land Management**

November 9, 2002

## **I. Introduction**

Resident fish studies of the Hells Canyon Complex began as part of the Applicant's *Fall Chinook Interim Recovery Plan and Study* (IPC 1991). *"Under the interim plan, Brownlee Reservoir would be drafted to improve water quality in the lower Snake River during critical life stages of the fall chinook."* (Page 2, Paragraph 1) Because the drafting of the reservoir might affect resident fish habitat and populations in the Hells Canyon Complex, the resident fish study was initiated. In 1996, additional studies were developed in collaboration with the Aquatic Resources Work Group (ARWG). *"The ARWG identified seven issues of concern, which led to the current study."* (Page 2, Paragraph 1 and 2)

The ARWG set two goals: 1) evaluate the effects of reservoir water-level fluctuations on the aquatic community and 2) evaluate the entrainment of reservoir species from HCC.

*"Partially addresses the ARWG's issues of concern, the objective of the study was to determine resident fish species composition, relative density, and population structure characteristics, as well as fish growth patterns along a longitudinal gradient in each of the three HCC reservoirs."* (Page 2, Paragraph 4)

## **II. Conclusions**

1. *"The HCC fish community was sampled from 1991 through 2000. Dominant species sampled during this time period were smallmouth bass, crappie, and large scale sucker. Bluegill were sampled in greater number in Oxbow and Hells Canyon reservoirs than in Brownlee Reservoir."* (Page 29, Paragraph 2)

Response: The BLM agrees with this statement. IPC definitely was able to determine the dominant species with their sampling effort. A total of 30 species of fish were sampled from 1991-2000. Some of the species were found to be in extremely limited numbers (i.e. four killifish and one oriental weatherfish). A number of the species were not abundant enough or could not be captured due to gear limitations to conduct a full sampling regime (i.e. sculpin, bull trout, brown trout, eastern brook trout, mountain whitefish, flathead catfish, blue catfish, brown bullhead, tadpole madtom, warmouth and

pumpkinseed). Therefore, information about the affects of the Hells Canyon Complex on these species is not determined by this study.

2. *“Smallmouth bass, black crappie, white crappie, and bluegill were the top four species sampled with all years pooled in all areas sampled.” (Page 29, Paragraph 3)*

Response: The BLM agrees with this statement. The Applicant provided extensive information on these species in this study.

3. *“Smallmouth bass, crappie spp., bluegill, largemouth bass, largescale sucker, bridgelip sucker, and pumpkinseed had  $W_r > 85$ .” (Page 29, Paragraph 4)*

Response: The  $W_r$  (weight ratio) finding indicates that the growth rates of these species are normal and the food supply is adequate in the three reservoirs. A weight ratio of 100 is a national standard for fish weight. A ratio at or above 85 is considered satisfactory.

4. *“Rainbow trout, mountain whitefish, channel catfish, and yellow perch had  $W_r < 85$ .” (Page 29, Paragraph 5)*

Response: The fact that these four species have weight ratios that were below the norm suggests that they have a problem with food supply in the reservoirs. *“The same impoundments that make it possible for warmwater species to extend their ranges may tend to limit native coldwater species in the HCC.”* (Page 28, Paragraph 2) In other words, it is unlikely that trout and whitefish would do well in water the temperature of which exceeds their range of tolerance for much of the summer. Although food may be relatively abundant, the poor water quality likely creates stress that prevents them from feeding or gaining weight.

5. *“ $W_r$  values for black crappie were positively correlated with hydrologic-year type.” (Page 29, Paragraph 6)*

Response: The BLM agrees with this statement.

6. *“CPUE for small mouth bass were positively correlated with hydrologic-year type.” (Page 29, Paragraph 7)*

Response: The BLM agrees with this statement.

7. *“Smallmouth bass year-class strength and nesting density are highly correlated.” (Page 29, Paragraph 8)*

Response: The BLM agrees with this statement.

### **III. Study Adequacy**

This study only partially meets the objectives of the ARWG. The ARWG set two goals:

- 1) evaluate the effects of reservoir water-level fluctuations on the aquatic community and
- 2) evaluate the entrainment of reservoir species from the HCC.

The study focuses primarily on smallmouth bass, large mouth bass, black crappie, white crappie, bluegill, and channel catfish that are primary game fish of concern to Idaho and Oregon fishery agencies. It did meet the first ARWG goal by correlating water-level fluctuation with survival of small mouth bass and crappie species, but it did not meet this objective for the other species that may be affected.

No entrainment studies were conducted to meet the ARWG second goal of studying entrainment of fish through the dams.

### **IV. BLM Conclusions and Recommendations**

#### Conclusions

The Applicant's study is directed primarily at warmwater game fish which are of primary concern to the fishing public and local government. Other species were documented but were never a primary focus of IPC efforts. The seven objectives of the ARWG listed in the introduction are very minimally addressed.

1. The study draws no conclusion about the actual affect of the HCC operations on any of the 30 species identified as being present in the reservoirs.
2. The study provides good information about the relative abundance, growth rates, distribution, condition factors, year class success, and relationship to water levels for white crappie, black crappie, smallmouth bass, channel catfish, and bluegill that are important game species of interest to fish and game agencies.
3. The study indicates that some species with low body weight such as redband trout and whitefish are stressed by poor water quality or inadequate food base.
4. The study does not address entrainment of fish through the dams and into Hells Canyon, which is of interest to the BLM.
5. The study found that catfish were the main species being fished in the HCC.
6. The study provides a list of species present in the reservoirs and their relative abundance.

#### Recommendations

1. The BLM should request that the Applicant conduct entrainment studies that were requested by the Aquatic Resources Work Group. The findings may be used to improve reservoir management for warmwater fish.